

**ABSTRACT OF THE DISCLOSURE**

An on-die device is provided to measure/detect voltage fluctuations. This may include a control unit to generate differential reference signals (such as differential current signals), a first detector unit and a second detector unit. The differential reference signals may be generated based on a Vcc reference signal and a Vss reference signal. The first detector unit may receive the differential reference signals from the control unit and may receive first voltage signals (also called monitored signals) from a first device under test (DUT) located on the die or from a first area on the die. The first detector unit may provide (or output) a first signal indicative of a voltage fluctuation (voltage droop or overshoot) of the first voltage signals. The second detector unit may receive the differential reference signals from the control unit and may receive second voltage signals (also called monitored signals) from a second device under test (DUT) located on the die. The second detector unit may provide (or output) a second signal indicative of a voltage fluctuation (or voltage droop) of the second voltage signals.